

A. Total impacts to stream channels and wetlands:

1. Stream Impacts:

a. Road crossings

Xing Impact #1	590'x5'	2950 ft ²	0.07 acres of channel
Xing Impact #2	189'x3'	540 ft ²	0.01 acres of channel
Xing Impact #3	280'x5'	1400 ft ²	0.03 acres of channel
Xing Impact #4	120'x3'	<u>360 ft²</u>	0.01 acres of channel
		5250 ft ²	0.12 acres of channel

b. Fill in channel to be relocated

Int. Str C (Impact #4)	1100'x3'	3300 ft ²	0.07 acres of channel
Int. Str A (Impact #1)	<u>501'x6'</u>	<u>3006 ft²</u>	<u>0.07</u> acres of channel
Loss of channel	1601 lin. ft.	6306 ft ²	0.14 acres of channel
Channel replacement of shown under B. below.			

2. Wetland Impacts:

a. Road construction

Wetland 1 (Impact #1)	2614 ft ²	0.06 acres of PEMC
Wetland 3 (Impact #5)	<u>5400 ft²</u>	0.12 acres of PEMC
	8014 ft ²	0.18 acres of PEMC

Wetland mitigation at 1.5:1 equals 0.27 acres of PEMC wetland to be created.

B. Impacts to channel Int. Str. A and Int. Str. C due to relocation and straightening.
Discussion below under C. Road Crossing #1 and #4.

1. Existing:	length	acre of channel
Int. Str. A	1542'	0.21 ac
Int. Str. C	<u>1400'</u>	<u>0.10</u> ac
Total	2942'	0.31 ac
2. Loss of channel:	length	acre of channel
Int. Str. A	501'	0.07 ac
Int. Str. C	<u>1100'</u>	<u>0.08</u> ac
Total	1601'	0.15 ac
3. Remaining after loss (before relocating):	length	acre of channel
Int. Str. A	1041'	0.14 ac
Int. Str. C	<u>300'</u>	<u>0.02</u> ac
Total	1341'	0.16 ac

4. Remaining channel plus

Relocated channel:	length	acre of channel
Int. Str. A	1041'	0.14 ac
Int. Str. C	300'	0.02 ac
Relocated	<u>1875'</u>	<u>0.21 ac</u>
Total	3216'	0.37 ac

5. Before/after construction:	length	acre of channel
Before (Int. A, Int. C)	2941'	0.31 ac
After (int. A, Int. C, Rel.)	<u>3216'</u>	<u>0.37 ac</u>
Gain after construction	+274'	+0.06 ac

C. Description of Impacts - See Figure No. 2 for location:

1. Road Crossing #1 on Chicago Street.

This road crossing for Chicago Street will impact Intermittent Stream A and Wetland 1 in the northwest corner of the property. The City has set access from 180th Street into the property of Chicago Street at a location just north of where Int. Stream A enters the property. The road crossing to allow for this access requires a twin (8x8) box culvert approximately 200-feet in length and associated wing walls. This will impact approximately 590 feet of the stream. To stabilize the channel and inhibit further erosion, the curve in the channel where it enters under 180th Street will be straightened. Loss in channel length will be 501 feet (0.07 acres). Construction will require 500 cy of soil backfill and 70 tons of riprap at the ends of the culvert. The channel will otherwise remain open. Channel loss will be mitigated in the segment of relocated channel.

2. Road Crossing #2 on Chicago Street.

This second road crossing for Chicago Street will impact the lower segment of Intermittent Stream B in the middle of the property which drains into Int. Stream A. The structure will be a twin 72" culvert 230' in length. Construction will require 25 cy of soil backfill and 30 tons of riprap. Actual stream impact will be 540 ft² (0.01 acres).

3. Road Crossing #3 on Burke Street.

This road crossing for Burke Street will impact the upper segment of Intermittent Stream B in the middle of the property. The structure will be 170 feet of 36" pipe and 100 feet of 54" pipe. The actual stream impact will be 280'x5' equaling 0.03 acres. Construction will require 105 cy of soil backfill and 25 tons of riprap.

4. Road Crossing #4 on Burke Street.

This second road crossing for Burke Street will impact the upper segment of Intermittent Stream C on the east of the property. It is to the east of Road Crossing #3. This will cross Int. Str. C approximately 300 feet wet of where C enters the property, leaving that segment of Int. Str. C open. North of the crossing the 1100 feet stretch of Int. Str. C will be filled and relocated to the east. Fill will equal 215 cy of soil backfill. This segment connects with the road crossing. It will flow to the north and then curve east for a total segment length of 1875 feet. It will drain into the lowest segment of Int. Str. B and then to Int. Str. A. The crossing structure will be 100 feet of 48" pipe. The impact for this structure will be 120'x3' equaling 0.01 acres. Construction will require 20 cy of soil backfill and 20 tons of riprap.

5. 17th Street impact to Wetland 3.

This is shown as Impact #5. The impact is a public street (174th Street) constructed through a wetland in the far southwest corner of the property. The wetland is categorized as palustrine, emergent, seasonally flooded (PEMC) and is 0.31 acres in size. It has been created in 1996 in association with the adjacent subdivision. The street location is set by the City of Omaha to connect with the existing 174th Street stub coming from the existing subdivision. The street will cross the western side of the wetland impacting 0.12 acres. The area of soil backfill required is 200 cubic yards. The existing wetland will remain on the east side of the new street and be enlarged to accommodate mitigation for this wetland impact plus the 0.06 acre PEMC wetland impacted by Road Crossing #1.

D. Proposed Mitigation

1. Wetland Mitigation.

Wetland 1 and Wetland 3 are being impacted by the construction of the street network (Road Crossing Impact #1 and Street Construction Impact #5). They are both categorized as palustrine, emergent, seasonally flooded (PEMC) wetlands. Wetland 1 is 0.06 acres and will be completely impacted. Wetland 3 is 0.31 acres. Of this, 0.12 acres will be impacted. Total wetland area to be mitigated is 0.18 acres (0.06 + 0.12). The replacement ratio of 1.5:1 will require 0.27 acres of PEMC wetland to be created.

The proposed mitigation site is at the location of the existing Wetland 3 in the southeast corner of the property. The project will impact the western third of this wetland. The mitigation concept is to expand the remaining portion of Wetland 3 within the corner. It would be set aside in an outlot. See Figure No. 3.

Wetland 1 is predominantly Reed canary grass (*Phalaris arundinacea*) and occurs within the upper banks of Int. Stream A. Wetland 3 is not associated with a channel. Rather, it is an impoundment area that appears to have been constructed in 1996, concurrent with the adjacent golf course construction. The area ranges from saturated to inundated.

Vegetation is mixed with cattails (*Typha angustifolia*) and rice cut-grass (*Leersia oryzoides*) in areas of inundation to barnyard grass (*Echinochloa crusgalli*), willow saplings (*Salix amygdaloides*), and spikerush (*Eleocharis compressa*) in saturated area. The fringe areas are characterized by ragweed (*Ambrosia trifida*), goldenrod (*Solidago Canadensis*), dogbane (*Apocynum cannabinum*) and cottonwood samplings (*Populus deltoids*).

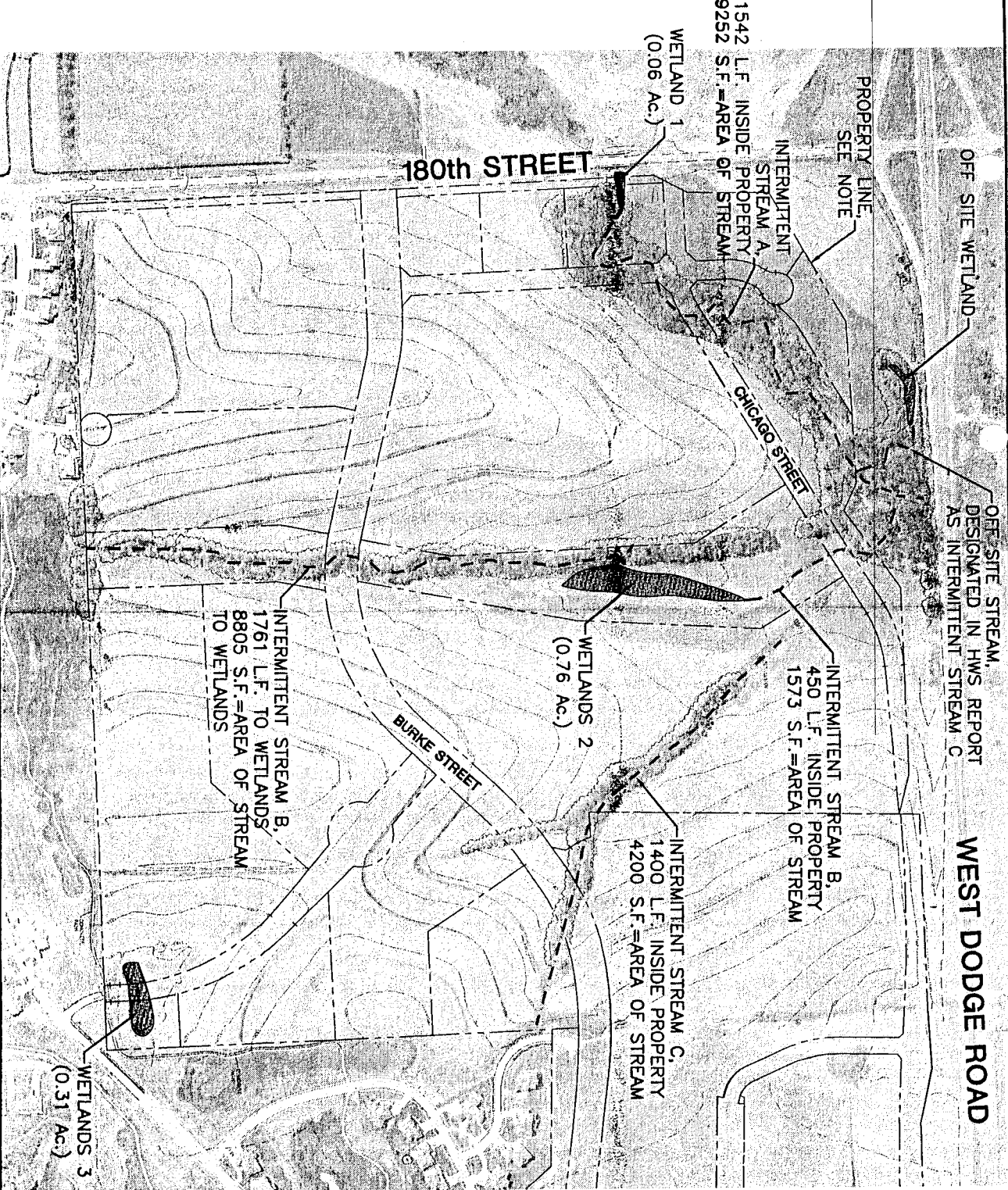
Neither of these two wetlands exhibit very high quality vegetation. Thus, the intent is to see the mitigation site with a different selection of hydrophytic species. A proposed mix could include the following: Prairie cordgrass, Boneset, Flowl Manna rass, Joe-pye weed, and Hard/Soft Bulrush.

2. Stream Relocation.

The stream relocation will provide new channel length to accommodate the impacts to Intermittent Stream A and Intermittent Stream C. The project will eliminate 501 feet of channel on Int. Str. A (Road Crossing #1) and will relocate 1100 feet of channel on Int. Str. C (Road Crossing #4). A total of 1601 feet of channel will be filled. Section B above explains the dimensional calculations for these impacts.

The lower segment of Intermittent Stream C will be relocated to the east to allow for the development of the hospital complex. The relocation will begin where Road Crossing #4, the east crossing of Burke Street, intersects the channel.

Figure No. 4 shows the location of the new channel and the channel cross-section. The relocated channel length will be 1875 feet by 5 feet. The channel will have 3:1 slopes and have 30 foot buffers on either side. The total width, including buffers, will be approximately 75 feet. The intent is to have this relocated segment meander within the 75 foot area. Thus, the buffer sides will vary from 20-30 feet, but the total section will be approximately 75 feet. Four grade control structures are proposed in the lower segment. The relocation will provide a gain of +274 feet in length of channel impacted.



LEGEND



WETLAND AREAS



JURISDICTIONAL AREAS

NOTE

PROPERTY LINE HAS CHANGED SINCE HWS REPORT, DUE TO PROPOSED IMPROVEMENTS OF THE INTERSECTION OF WEST DODGE ROAD AND 180th STREET.

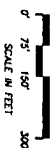


FIGURE NO. 1

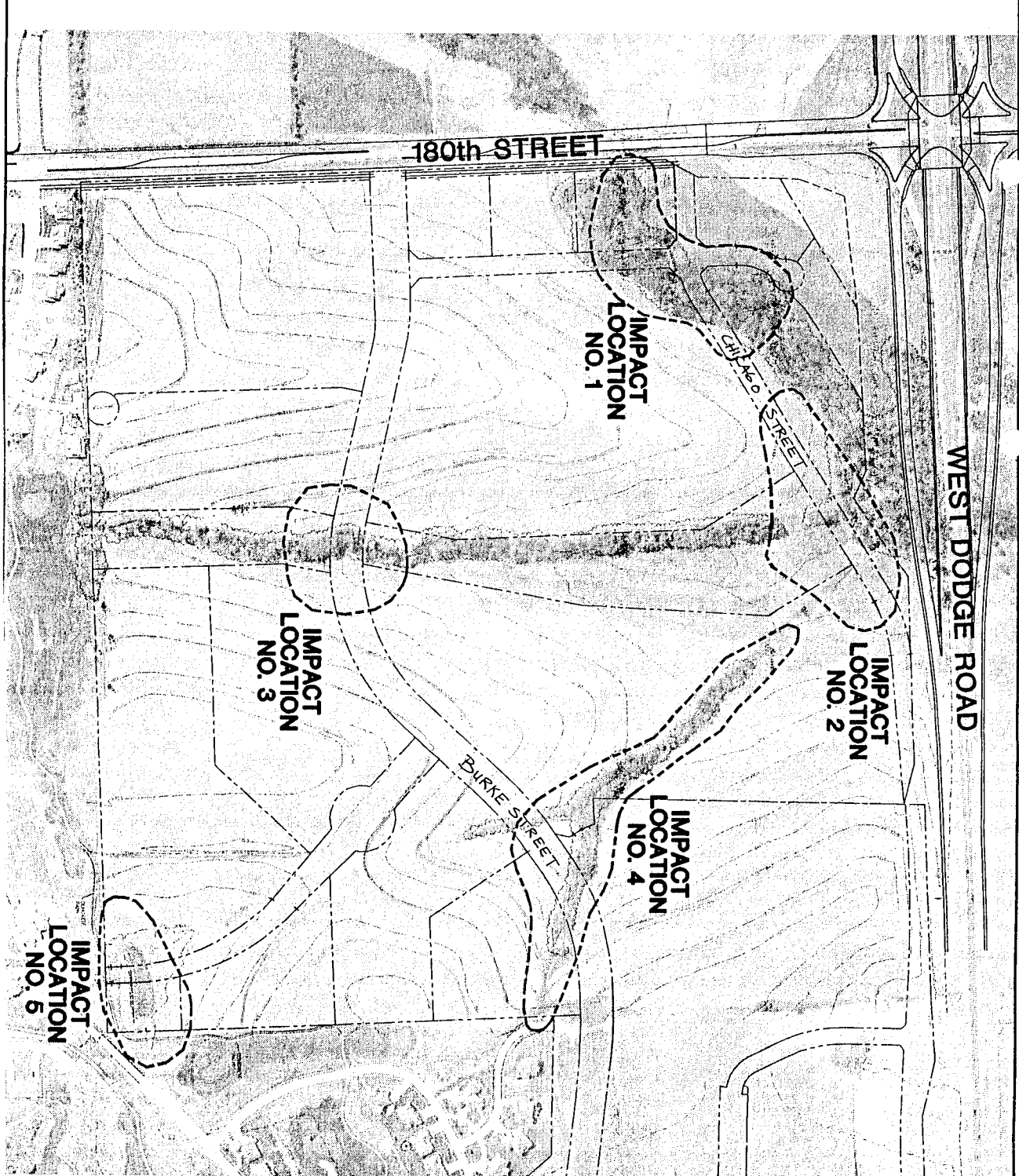
WEST VILLAGE POINTE

180th STREET & WEST DODGE ROAD

2 THOMPSON, DREESSEN & DORNER, INC.
Consulting Engineers & Land Surveyors

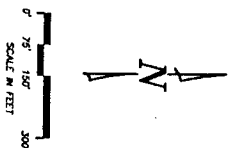
SCALE: AS SHOWN

DATE: 03-21-2003



IMPACT LOCATIONS

LEGEND



SCALE IN FEET

FIGURE NO. 2



2 THOMPSON, DREESSEN & DORNER, INC.
 Consulting Engineers & Land Surveyors
 10638 OLD MILL ROAD OMAHA, NEBRASKA 68154

WEST VILLAGE POINTE
 180th STREET & WEST DODGE ROAD

SCALE: AS SHOWN

DATE: 03-21-2003

DRAWN BY: RTM

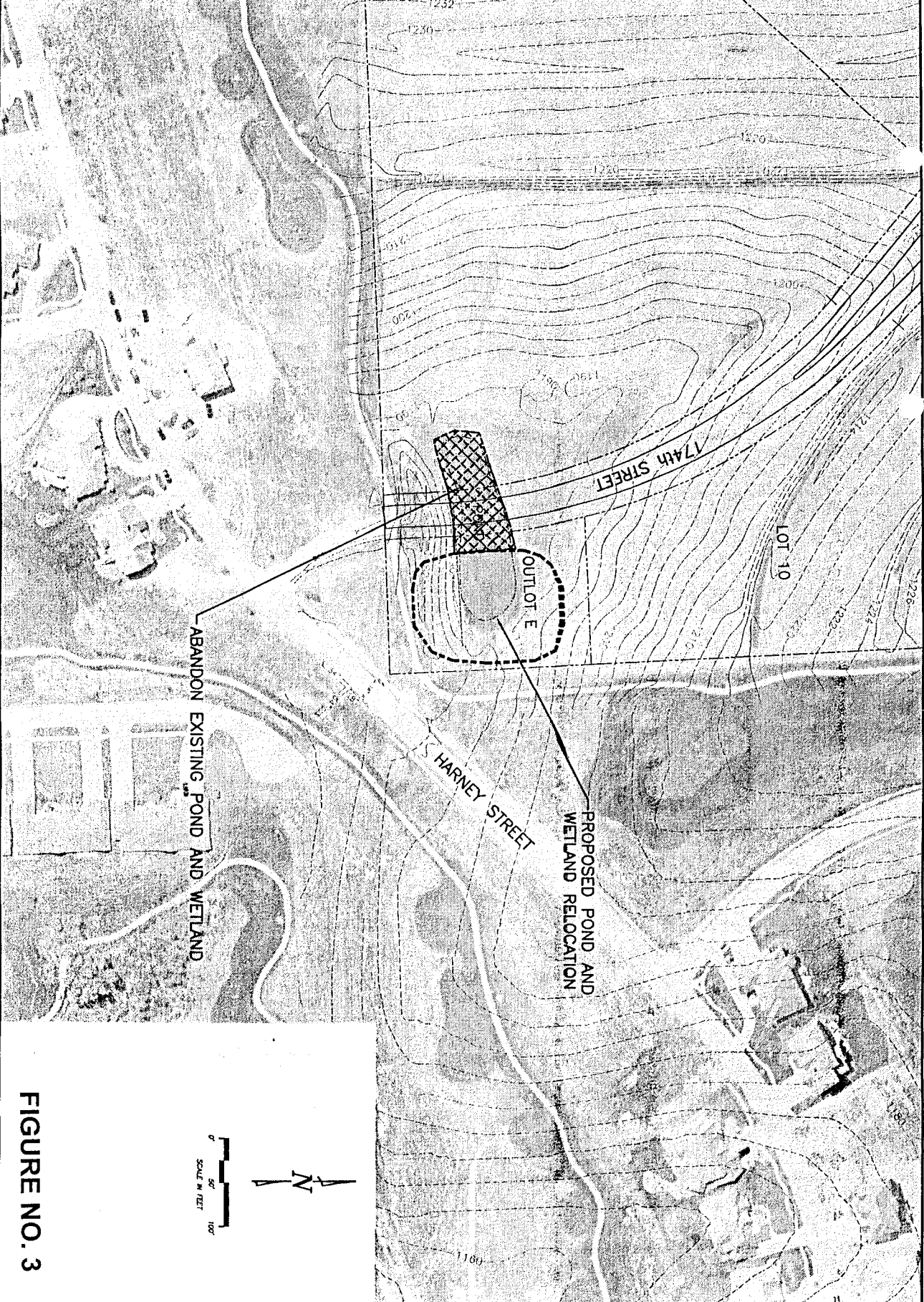


FIGURE NO. 3



2 THOMPSON, DREESSEN & DÖRNER, INC.
 Consulting Engineers & Land Surveyors
 10836 OLD MILL ROAD OMAHA, NEBRASKA 68154

WEST VILLAGE POINTE
 180th STREET & WEST DODGE ROAD

SCALE: AS SHOWN
 DATE: 03-21-2003
 DRAWN BY: RTM

CHANNEL SECTION

VARIES 20' TO 40'	75'			VARIES 20' TO 40'
	5'	5'	5'	
30' BUFFER STRIP FOR WATER QUALITY, N.D.E.O. REQUIREMENT	RELOCATED OPEN CHANNEL			30' BUFFER STRIP FOR WATER QUALITY, N.D.E.O. REQUIREMENT

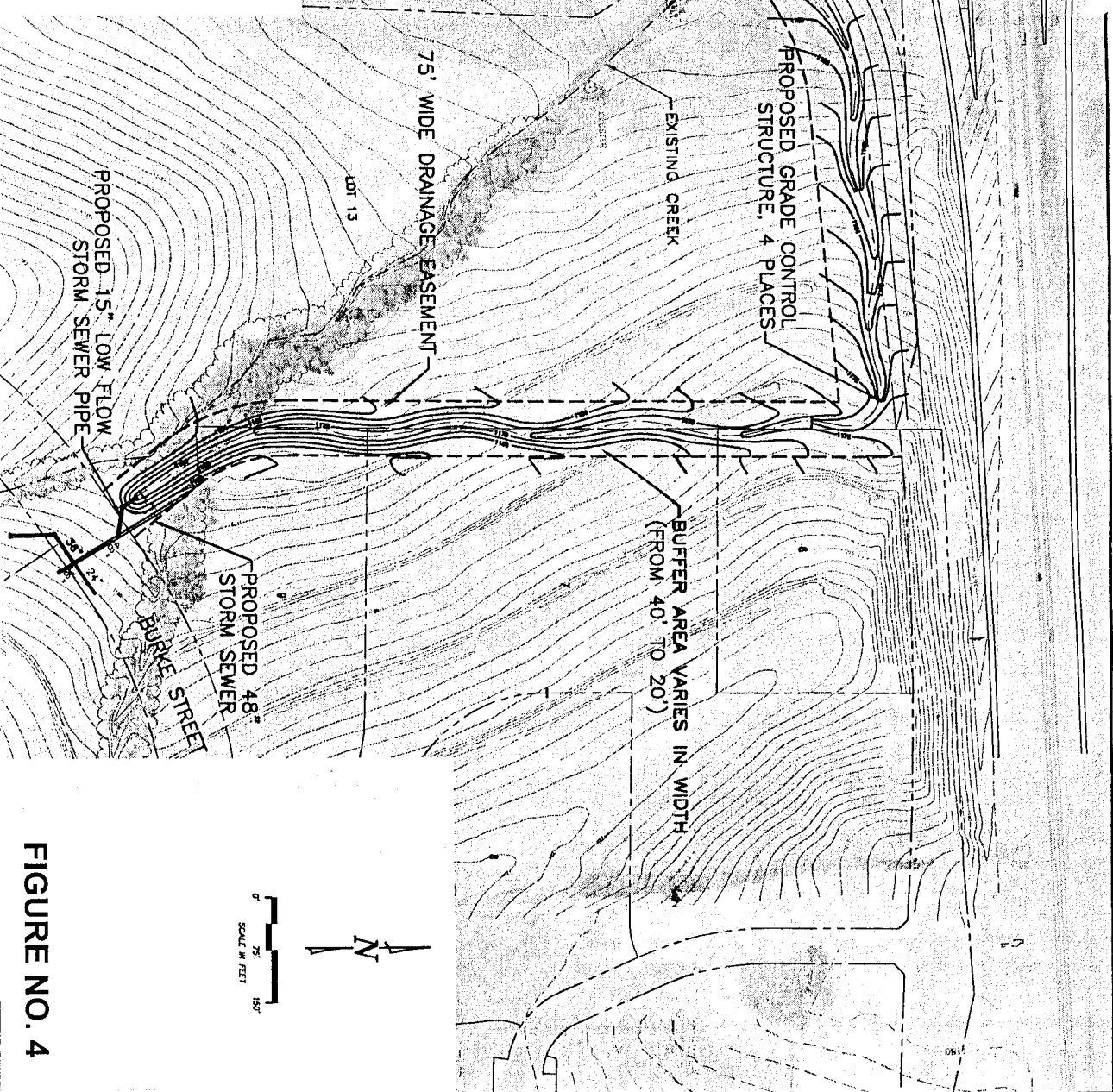


FIGURE NO. 4